CLAIMS

What is Claimed is:

1. A display control system for converting a VGA display signal to a flat panel display

5   signal, comprising:

a video memory for storing character codes and associated attribute code data relating

to a VGA display;

a character generator connected to said video memory and for generating a character

font data based on the character code, row number and display resolution, said

10   character font data selected to fill a flat panel display;

a character generator memory connected to said character generator for storing

character font data; and

an signal attribute controller for providing an output signal for a flat panel display from

the output of the character generator under the control of said attribute code data.

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2. A display control system according to claim 1 wherein said character generator

memory resides in layer 3 of the VGA video RAM.

3. A display control system according to claim 1 wherein said attribute controller maps

20   color attribute data to another color space.

4. A display control system for converting a VGA display signal to a flat panel display

signal, comprising:

a video memory for storing character codes and associated attribute code data relating

25   to a VGA display;

a character generator connected to said video memory and for generating a character

font data;

a first character memory connected to said character generator for storing character font

data;

5   a row number generator for deriving character row number based on horizontal

frequency;

a second character memory for storing font data for a plurality of rows; and

an attribute controller for providing an output signal for a flat panel display from the

output of said character generator under the control of said attribute code data, said

10   attribute controller operatively coupled to said row number generator, said output

signal comprising pixel data sufficient to fill the flat panel display.

5. A display control system according to claim 3 wherein said attribute controller maps

color attribute data to another color space.

15   6. A display control system according to claim 3 wherein said attribute controller

includes a lookup table for each row, each of said lookup tables containing

expanded cell line information.

20   7. A display control system according to claim 6 wherein said row lookup tables reside

in layer 3 of the VGA video RAM.

8. A display control system according to claim 7 wherein the row lookup table for the

next row is loaded into VGA video RAM during horizontal blanking.

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9. A method for expansion of a first sequence of data elements representing successive rows of successive character cells corresponding to a sequence of text characters to a second sequence of data elements longer than said first sequence, the method comprising:

5 receiving a data element representing a row of a text character cell;

forming a horizontal expansion pattern corresponding to said text character, said pattern set to a specified length;

appending said horizontal expansion pattern to the second sequence of data elements; and

10 determining whether another data element should be read.

10. A method according to claim 9 wherein

said specified length is the same for all horizontal expansion patterns comprising said second sequence of data elements; and

15 said second sequence of data elements fills a flat panel display.

11. A method according to claim 10 wherein said horizontal expansion pattern is contained in a lookup table indexed by character number and row number.

20 12. A method according to claim 11 wherein said lookup table resides in layer 3 of VGA video RAM.

13. A method according to claim 9 wherein

said data element comprises eight bits; and

said horizontal expansion pattern comprises ten bits.

14. A method for expansion of a first sequence of data elements representing successive

5 rows of successive character cells corresponding to a sequence of text characters to

a second sequence of data elements longer than said first sequence, the method

comprising:

receiving a plurality of bits representing a plurality of text character cell lines;

determining the character cell row number based on the horizontal frequency;

10 determining the first and last bits for each data element within said first sequence;

forming a horizontal expansion pattern corresponding to said text character, said pattern

set to a specified length;

appending said horizontal expansion pattern to the second sequence of data elements;

and

15 determining whether another data element should be read.

15. A method according to claim 14 wherein determining the first and last bits for each

data element comprises

scanning said plurality of bits for repeating bit values at whole number multiples of eight

20 or nine, said bit values corresponding to the background color;

setting the cell line bit length to said whole number mulitple;

setting the first bit of a data element to the bit following said repeating bit value; and

setting the last bit of a data element based on said first bit and said cell line bit length.

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16. A method according to claim 15 wherein said horizontal expansion pattern is contained in a lookup table.

17. A method according to claim 16 wherein said lookup table resides in layer 3 of VGA video RAM.

18. A method according to claim 15 further comprising

determining whether a horizontal scan has completed;

loading into VGA RAM a lookup table containing horizontal expansion information for the next row when a horizontal scan has completed.

19. A method according to claim 18 wherein said lookup table resides in layer 3 of VGA video RAM.

20. A computer system comprising:

a central processing unit;

a system memory;

a bus controller coupled to said central processing unit and said system memory;

a video controller coupled to said bus controller, said video controller comprising

a video memory for storing character codes and associated attribute code data relating to a VGA display;

a character generator connected to said video memory and for generating a character font data based on the character code, row number and display resolution, said character font data representing an expanded cell line;

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a character generator memory connected to said character generator for storing

character font data; and

an attribute controller for providing an output signal for a flat panel display from the

output of the character generator under the control of said attribute code data;

5   and

a display panel coupled to said video controller for display of said output signal.

21. A program storage device readable by a machine, tangibly embodying a program of

instructions executable by the machine to expand a first sequence of data elements

10   representing successive rows of successive character cells corresponding to a

sequence of text characters to a second sequence of data elements longer than the

first sequence, comprising

a first module comprising code for causing a machine to read a data element representing

a row of a text character cell;

15   a second module comprising code for causing a machine to form a horizontal expansion

pattern corresponding to said text character, said pattern set to a specified length;

a third module comprising code for causing a machine to append said horizontal

expansion pattern to the second sequence of data elements; and

a fourth module comprising code for causing a machine to determine whether another

20   data element should be read.

22. A program storage device according to claim 21 wherein

said specified length is the same for all horizontal expansion patterns comprising the

second sequence of data elements; and

25   the second sequence of data elements fills a flat panel display.

23. A program storage device according to claim 22 wherein said horizontal expansion pattern is contained in a lookup table indexed by character number and row number.

5   24. A program storage device according to claim 23 wherein said lookup table resides in layer 3 of VGA video RAM.

25. A program storage device according to claim 24 wherein

the data element comprises eight bits; and

10   said horizontal expansion pattern comprises ten bits.

26. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to expand a first sequence of data elements representing successive rows of successive character cells corresponding to a

15   sequence of text characters to a second sequence of data elements longer than the first sequence, comprising

a first module comprising code for causing a machine to receive a plurality of bits representing a plurality of text character cell lines;

20   a second module comprising code for causing a machine to determine the character cell row number based on the horizontal frequency;

a third module comprising code for causing a machine to determine the first and last bits for each data element within the first sequence;

a fourth module comprising code for causing a machine to form a horizontal expansion

25   pattern corresponding to said text character, said pattern set to a specified length

and append said horizontal expansion pattern to the second sequence of data

elements; and

a fifth module comprising code for causing a machine to determine whether another data

element should be read.

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27. A program storage device according to claim 26 wherein determining the first and

last bits for each data element comprises

scanning said plurality of bits for repeating bit values at whole number multiples of eight

or nine, said bit values corresponding to the background color;

10   setting the cell line bit length to said whole number mulitple;

setting the first bit of a data element to the bit following said repeating bit value; and

setting the last bit of a data element based on said first bit and said cell line bit length.

28. A program storage device according to claim 27 wherein said horizontal expansion

pattern is contained in a lookup table.

29. A program storage device according to claim 28 wherein said lookup table resides in

layer 3 of VGA video RAM.